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EXAMINER	
CUTLER, ALBERT H	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/811,019	VANBREE, KEN
	Examiner	Art Unit
	ALBERT H. CUTLER	2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _24 June 2008_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-12_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-12_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to communication filed on June 24, 2008. Claims 1-12 are pending in the application and have been examined by the Examiner.

Response to Arguments

2. Applicant's arguments filed June 24, 2008 have been fully considered but they are not persuasive.

3. Applicant cites the Examiner Interview Summary filed May 29, 2008, stating, "An amendment to the independent claims was proposed which would add additional limitations to the independent claims in an attempt to distinguish Applicant's invention from the prior art of reference. Such amendment would comprise, for example, **indicating that the acquired reference image is acquired of a random or arbitrary scene of interest**, identifying fixed points in said reference image, **and** that the reference image comprises a computational mode generated from an initial image of the subject of interest. The Examiner agreed that if **all of the above stated limitations** were incorporated into independent claims 1 and 4, then a rejection based upon the prior art of reference would be overcome."

4. Applicant has amended independent claims 1, 4 and 11 to include the limitation that, "said reference image is based on an initial acquired image of the subject of interest". This is different than "indicating that the acquired reference image is acquired of a random or arbitrary scene of interest", as specified in the interview summary. The Examiner agreed that if the limitations stated in the interview summary, as a whole, were incorporated into the independent claims, then the rejection based upon the cited

prior art would be overcome. However, this is a moot point, as Applicant has not amended independent claims 1, 4 and 11 to recite that the acquired reference image is acquired of a random or arbitrary scene of interest, or something of similar nature.

5. Applicant argues that Hashima et al. does not explicitly teach that said reference image is based on an initial acquired image of said subject of interest, where said initial acquired image enable the identification of fixed points in said reference image, and wherein said reference image is a computational mode generated from said initial image of said subject of interest.

6. The Examiner respectfully disagrees. Hashima et al. teaches that said reference image is based on an initial acquired image of said subject of interest (In Hashima et al., the subject of interest is a target mark (10). A reference image of the target mark (10) is obtained (i.e. initially acquired) when the target mark (10) is in the target position. See column 15, line 62 through column 16, line 16.). Hashima et al. further teaches that said initial acquired image enables the identification of fixed points in said reference image (See column 16, lines 17-36. A white triangle (12) and a black circle (11) are identified as fixed points in the reference image, which fixed points are used to determine a shift along six degrees of freedom. See figures 2-4 and 28-30.). Additionally, Hashima et al. teaches that said reference image is a computational model generated from said initial image of said subject of interest (The reference image comprises a computational model, as it is the basis of a computation of a shift from a target position, column 16, lines 8-57.).

7. Applicant additionally includes the limitation in claim 4 that the computation is by means of a complex program run a single time. Hashima et al. teaches a complex program involving an image processor in column 14, line 61 through column 15, line 37.

8. Therefore the rejection is maintained by the Examiner.

9. Applicant is reminded that any subsequent amendment to the claims should be commensurate with the corresponding disclosure.

Claim Rejections - 35 USC § 102

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. Claims 1, 2, 4, 6, 8, 9, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hashima et al.(US 5,521,843).

12. The response to Applicant's arguments, as outlined above, is hereby incorporated into the rejection of claims 1, 2, 4, 6, 8, 9, 11 and 12 by reference.

Consider claim 1, Hashima et al. teach:

An imaging system(figure 1) to reposition an image capture device(camera, 20) in a position relative to a subject of interest according to six degrees of freedom(column 7, lines 38-65) as preserved in association with a reference image("image produced when the target mark 10 is in the target position", column 16, lines 9-16) of the subject of interest(see figure 1), comprising:

an image capture device(20, figure 1);

a position apparatus(robot, 30) on which the image capture device(20) is mounted(see figure 1), operable to orient the image capture device(20) relative to a subject of interest according to six degrees of freedom(column 7, lines 38-65);

a reference image of the subject of interest("image produced when the target mark 10 is in the target position", column 16, lines 9-16), wherein said reference image is based on an initial acquired image of said subject of interest (In Hashima et al., the subject of interest is a target mark (10). A reference image of the target mark (10) is obtained (i.e. initially acquired) when the target mark (10) is in the target position. See column 15, line 62 through column 16, line 16.), where said initial acquired image enables the identification of fixed points in said reference image (See column 16, lines 17-36. A white triangle (12) and a black circle (11) are identified as fixed points in the reference image, which fixed points are used to determine a shift along six degrees of freedom. See figures 2-4 and 28-30.), and wherein said reference image is a computational model generated from said initial image of said subject of interest (The reference image comprises a computational model, as it is the basis of a computation of a shift from a target position, column 16, lines 8-57.).

a computational device(50, 60) coupled to the position apparatus(30, see figure 1), such computational device(50, 60) capable of receiving images from the image capture device(20) and receiving the reference image, performing a comparison, and communicating adjustments to reposition the image capture device(20) along any of six degrees of freedom(A current image is compared with a reference image, a difference is calculated, this difference is sent to the robot controller(60), and the robot controller(60)

controls the robot(30) to position the camera(20) such that the current image position is the same as the reference image position. See column 16, line 9 through column 19, line 26.).

Consider claim 2, and as applied to claim 1 above, Hashima et al. further teach that the communication of position adjustments is via signals to the positional apparatus(30) from the computational device(50, 60, column 7, lines 45-65, column 18, line 47 through column 19, line 24).

Consider claim 4, Hashima et al. teach:

A method for repositioning an image capture device(20) relative to a subject of interest(1) according to six degrees of freedom(column 15, line 58 through column 19, line 26, figure 29) comprising the steps of:

a) initializing an imaging system, wherein initializing includes the steps of:

a. 1) obtaining a reference image of the subject of interest("image produced when the target mark 10 is in the target position", column 16, lines 9-16), wherein said reference image is acquired from and based on an initial acquired image of said subject of interest(In Hashima et al., the subject of interest is a target mark (10). A reference image of the target mark (10) is obtained (i.e. initially acquired) when the target mark (10) is in the target position. See column 15, line 62 through column 16, line 16.), where said initial acquired image enables the identification of fixed points in said reference image (See column 16, lines 17-36. A white triangle (12) and a black circle

(11) are identified as fixed points in the reference image, which fixed points are used to determine a shift along six degrees of freedom. See figures 2-4 and 28-30.), and wherein said reference image is a computational model generated from said initial image of said subject of interest (The reference image comprises a computational model, as it is the basis of a computation of a shift from a target position, column 16, lines 8-57.), wherein said reference image includes multiple reference points in 3-dimensional space(See column 7, lines 45-48, column 7, line 66 through column 8, line 17, column 15, line 58 through column 16, line 8, figures 2, 3, and 4. A reference image is obtained of a three-dimensional target mark(10).);

a.2) repositioning an image capture device relative to the subject of interest, where such repositioning uses six degrees of freedom(column 16, lines 9-57);

b) imaging the subject of interest(column 16, lines 9-16);

c) computing by means of a complex program run a single time (Hashima et al. teaches a complex program involving an image processor in column 14, line 61 through column 15, line 37.) the difference between the reference image of the subject of interest and the image capture device image(column 16, line 9 through column 18, line 30, note especially column 16, lines 9-16);

d) refining the position of the image capture device(20) so that the image capture device(20) is in the same position relative to the subject of interest as that position from which the reference image was obtained, where such refining the position of the image capture device occurs along six degrees of freedom(column 16, lines 9-16, column 18, line 31 through column 19, line 26).

Consider claim 6, and as applied to claim 4 above, Hashima et al. further teach that the reference image is obtained after fixed reference points have been selected in the subject of interest(See figures 2, 3, and 4, column 7, line 66 through column 8, line 17. A target mark(10) having fixed reference points is placed in the image and captured with the reference image.).

Consider claim 8, and as applied to claim 4 above, Hashima et al. further teach that time has elapsed between the initialization process and the repositioning of the image capture device(Column 15, line 62 through column 16, line 16. A reference image is obtained with the target mark(10) in the target position, and later compared to a recent image to reposition the camera.).

Consider claim 9, and as applied to claim 4 above, Hashima et al. further teach that the computation of position is communicated to an automatic position correction apparatus(robot, 30, figure 1, column 7, lines 38-56, column 18, line 36 through column 19, line 24).

Consider claim 11, Hashima et al. teach:

An apparatus(30, figure 1) for positioning an imaging device(20) and adapted for coupling to an image capture device(20, see figure 1) and where such apparatus(30) is positions said image capture device(20) along six degrees of freedom(column 7, lines

38-65), such that the positioning of the image capture device(20) is controllable and said apparatus(30) orients the image capture device(20) relative to a subject of interest using six degrees of freedom to orient the image capture device(column 7, lines 38-65), and wherein said positioning of said image capture device relies on a reference image of the subject of interest(“image produced when the target mark 10 is in the target position”, column 16, lines 9-16), wherein said reference image is based on an initial acquired image of said subject of interest (In Hashima et al., the subject of interest is a target mark (10). A reference image of the target mark (10) is obtained (i.e. initially acquired) when the target mark (10) is in the target position. See column 15, line 62 through column 16, line 16.), where said initial acquired image enables the identification of fixed points in said reference image (See column 16, lines 17-36. A white triangle (12) and a black circle (11) are identified as fixed points in the reference image, which fixed points are used to determine a shift along six degrees of freedom. See figures 2-4 and 28-30.), and wherein said reference image is a computational model generated from said initial acquired image of said subject of interest (The reference image comprises a computational model, as it is the basis of a computation of a shift from a target position, column 16, lines 8-57.).

Consider claim 12, and as applied to claim 11 above, Hashima et al. further teach that the positioning of the image capture device is automated(The positioning is done by a mechanical robot(30), column 7, lines 38-65, figure 1.).

Claim Rejections - 35 USC § 103

13. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

14. Claims 3, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashima et al. in view of Verghese(US 7,038,709).

15. The response to Applicant's arguments, as outlined above, is hereby incorporated into the rejection of claims 3, 7 and 10 by reference.

Consider claim 3, and as applied to claim 1 above, Hashima et al. teach of an imaging system to reposition an image capture device in six degrees of freedom(see claim 1 rationale). However, Hashima et al. do not explicitly teach of a user interface.

Verghese is similar to Hashima et al. in that Verghese teaches of an imaging system(figures 1-3) to reposition an image capture device(Camera, 16) in a position relative to a subject of interest as that of a reference image of the subject of interest, comprising an image capture device(camera, 16), a position apparatus(figure 2) on which the image capture device(16) is mounted(see figure 3a), operable to orient the image capture device relative to a subject of interest(See column 5, lines 31-45. The position apparatus orients the image capture device in order to track the motion of the subject of interest.), a reference image of the subject of interest(See figure 12, step 508, column 18, lines 8-25. A reference image is obtained to determine current camera

orientation.), a computational device(44, figure 1) coupled to the position apparatus(figure 1), such computational device(44) capable of receiving images from the image capture device(16) and of receiving the reference image(column 5, lines 56-67), performing a comparison(The image processing component(44) receives an image, determines the location of a certain color using a color tracking algorithm, centers that location on the camera field of view, compares subsequent frames to determine if the position of the predetermined color has moved from the center, and repositions the imaging device so that the predetermined color is re-centered. See column 5, line 56 through column 7, line 12, figure 12, column 17, line 8 through column 19, line 6.), and communicating position adjustments to reposition the image capture device(column 6, lines 37-55).

However, in addition to the teachings of Hashima et al., Verghese teaches that the communication of position adjustments is by means of positional adjustment data conveyed by means of a user interface(column 5, lines 47-55, column 7, lines 24-35).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include a user interface to communicate position adjustments as taught by Verghese in the imaging system to reposition an image capture device as taught by Hashima et al. for the benefit creating a more versatile device by allowing the user to control the size and quality of a displayed image, and the ability to override the image tracking system in favor of user positioning when desired(Verghese, column 5, lines 47-55).

Consider claim 7, and as applied to claim 4 above, Hashima et al. teach of an imaging system to reposition an image capture device in six degrees of freedom, and of extracting reference points from an image(see claim 4 rationale). However, Hashima et al. do not explicitly teach that more than one image of the subject of interest representing more than one camera center are extracted.

Verghese is similar to Hashima et al. in that Verghese teaches of an imaging system(figures 1-3) to reposition an image capture device(Camera, 16) in a position relative to a subject of interest as that of a reference image of the subject of interest, comprising an image capture device(camera, 16), a position apparatus(figure 2) on which the image capture device(16) is mounted(see figure 3a), operable to orient the image capture device relative to a subject of interest(See column 5, lines 31-45. The position apparatus orients the image capture device in order to track the motion of the subject of interest.), a reference image of the subject of interest(See figure 12, step 508, column 18, lines 8-25. A reference image is obtained to determine current camera orientation.), a computational device(44, figure 1) coupled to the position apparatus(figure 1), such computational device(44) capable of receiving images from the image capture device(16) and of receiving the reference image(column 5, lines 56-67), performing a comparison(The image processing component(44) receives an image, determines the location of a certain color using a color tracking algorithm, centers that location on the camera field of view, compares subsequent frames to determine if the position of the predetermined color has moved from the center, and repositions the imaging device so that the predetermined color is re-centered. See column 5, line 56

through column 7, line 12, figure 12, column 17, line 8 through column 19, line 6.), and communicating position adjustments to reposition the image capture device(column 6, lines 37-55).

However, in addition to the teachings of Hashima et al., Verghese teaches that the step of initializing includes extracting reference points from more than one image of the subject of interest representing more than one camera center(Many images are obtained(column 5, lines 56-67), which images contain the same reference points, and these images contain more than one camera center as the camera is repositioned by the positioning device to re-center the reference points in the varying images, column 6, line 1 through column 7, line 12).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to extract reference points from more than one image as taught by Verghese, when extracting reference points as taught by Hashima et al. for the benefit of being able to effectively and efficiently track the movement of a subject(Verghese, column 2, lines 7-12).

Consider claim 10, and as applied to claim 4 above, Hashima et al. teach of an imaging system to reposition an image capture device in six degrees of freedom(see claim 4 rationale). However, Hashima et al. do not explicitly teach of a user interface.

Verghese is similar to Hashima et al. in that Verghese teaches of an imaging system(figures 1-3) to reposition an image capture device(Camera, 16) in a position relative to a subject of interest as that of a reference image of the subject of interest,

comprising an image capture device(camera, 16), a position apparatus(figure 2) on which the image capture device(16) is mounted(see figure 3a), operable to orient the image capture device relative to a subject of interest(See column 5, lines 31-45. The position apparatus orients the image capture device in order to track the motion of the subject of interest.), a reference image of the subject of interest(See figure 12, step 508, column 18, lines 8-25. A reference image is obtained to determine current camera orientation.), a computational device(44, figure 1) coupled to the position apparatus(figure 1), such computational device(44) capable of receiving images from the image capture device(16) and of receiving the reference image(column 5, lines 56-67), performing a comparison(The image processing component(44) receives an image, determines the location of a certain color using a color tracking algorithm, centers that location on the camera field of view, compares subsequent frames to determine if the position of the predetermined color has moved from the center, and repositions the imaging device so that the predetermined color is re-centered. See column 5, line 56 through column 7, line 12, figure 12, column 17, line 8 through column 19, line 6.), and communicating position adjustments to reposition the image capture device(column 6, lines 37-55).

However, in addition to the teachings of Hashima et al., Verghese teaches that the computation of position is communicated to the user through an interface(column 5, lines 47-55, column 7, lines 24-35).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include a user interface to communicate the computation

of position as taught by Verghese in the imaging system to reposition an image capture device as taught by Hashima et al. for the benefit creating a more versatile device by allowing the user to control the size and quality of a displayed image, and the ability to override the image tracking system in favor of user positioning when desired(Verghese, column 5, lines 47-55).

16. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hashima et al. in view of Palm(US 5,699,444).

17. The response to Applicant's arguments, as outlined above, is hereby incorporated into the rejection of claim 5 by reference.

Consider claim 5, and as applied to claim 4 above, Hashima et al. teach of a method for repositioning an image capture device(20) relative to a subject of interest(1) according to six degrees of freedom(column 15, line 58 through column 19, line 26, figure 29, claim 4 rationale). Hashima also teach of calculating the position of the 6 degrees of freedom based on a three-dimensional target(see claim 4 rationale).

However, Hashima et al. do not explicitly teach the step of generating a three dimensional model of the subject of interest through selection of reference points in the subject of interest.

However, as indicated by Palm, the repositioning of a camera using a three-dimensional model is well known in the art. Palm is similar to Hashima et al. in that

Palm is also concerned with repositioning a camera to re-center a subject of interest(column 1, lines 6-10, column 7, lines 26-39).

In addition to the teachings of Hashima et al., Palm teaches of using three-dimensional coordinates of reference points, and thereby using three-dimensional models to reposition and re-center a subject in relation to a camera. See figures 8 and 9, column 12, lines 21-48, column 15, lines 18-53.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use three-dimensional models to reposition an imaging system as taught by Palm in place of the target mark system taught by Hashima et al. for the benefit of providing simple, yet accurate procedures that can be applied successfully by non-technical personnel(Palm, column 4, lines 39-52).

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALBERT H. CUTLER whose telephone number is (571)270-1460. The examiner can normally be reached on Mon-Thu (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC
09/11/2008

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